

## CLAIMS

What is claimed is:

1. A method of forming an apparatus having an engageable polygonal protrusion  
5 comprising:
  - providing a continuous, rigid, deformable planar material;
  - defining a predetermined pattern including a plurality of member sides operable to define a central hub, and a plurality of elongated legs each extending from a respective member side;
  - 10 cutting the planar material according to the predetermined pattern;
  - deforming the planar material such that the plurality of member sides form a plurality of substantially opposed sides defining the central hub polygonal protrusion by forming congruent, complementary outside convex edges between each pair of parallel edges on adjacent member sides of the central hub polygonal protrusion, the  
15 complementary outside convex edges operable to reinforce each other in a complementary manner, the elongated legs providing an integral attachment surface defined by the elongated legs and adapted to be secured via an attachment to a rotatable object, the integral attachment surface adapted to distribute rotational forces from the central hub polygonal protrusion to the rotatable object;
  - 20 deforming the planar material at a line of demarcation between each of the member sides and corresponding elongated legs defined by the predetermined pattern, such that the elongated legs are adapted to be disposed along the surface of the rotatable object;
  - disposing the central hub polygonal protrusion on the rotatable object  
25 substantially centered along a rotational axis defined by the intended rotational engagement of the rotatable object; and
  - attaching, via the attachment, the integral attachment surface defined by the elongated legs to the rotatable object.
- 30 2. The method of claim 1 wherein the disposed central hub polygonal protrusion is adapted to be engaged and rotated by a receptacle.

3. The method of claim 2 wherein the attachment to the rotatable object is adapted to withstand shear forces from rotation of the receptacle, the shear forces transferable via the attachment between the integral attachment surface and the rotatable object, and  
5 generated from rotation of the central hub from an engaging receptacle engaged thereto.

4. The method of claim 1 further comprising attaching the engageable member to a rotatable object adapted to be rotated about an axis defined by the center of the polygon by engaging the opposed sides of the polygon.

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5. The method of claim 1 wherein the predetermined pattern defines a continuous, repeatable pattern from a continuous sheet of the rigid deformable planer material such that the continuous repeatable patterns are abutting on the continuous sheet without waste portions therebetween.

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6. The method of claim 1 wherein cutting further comprises cutting along a plurality of parallel lines demarcating the elongated portions wherein the parallel lines define the opposed surfaces, and wherein deforming further comprises deforming between the elongated leg portions and the member side portions.

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7. The method of claim 6 wherein deforming further comprises deforming along a line substantially perpendicular to the parallel lines at a line defined by the end of the cutting.

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8. The method of claim 1 wherein deforming further comprises deforming the opposed sides such that a discontinuous seam is formed along one of the opposed sides.

9. The method of claim 1 wherein deforming further comprises deforming such that the discontinuous seam is substantially centered on one of the opposed sides.

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10. The method of claim 1 wherein attaching further comprises securing selected from the group consisting of spot welding, arc welding, fusion, adhesive, stamping, and hydraulic bending.

5 11. An engageable protrusion member operable for rotating a rotatable object comprising:

a plurality of continuous rigid surfaces formed from a deformable planar material;

10 a plurality of linear deformations in the continuous material between each of the rigid surfaces defining a convex edge in the deformable planar material, such that each of the rigid surfaces forms a plurality of substantially opposed sides defining a central hub polygonal protrusion by forming congruent, complementary outside convex edges between each pair of parallel edges on adjacent sides of the central hub polygonal protrusion, the complementary outside convex edges operable to reinforce each other in a complementary manner and the central hub polygonal protrusion adapted to engage a  
15 receptacle, the cutting according to the predetermined pattern includes an integral attachment surface defined the elongated legs extending from the sides and adapted to be secured via an attachment to a rotatable object, the integral attachment surface adapted to distribute rotational forces from the central hub polygonal protrusion across the rotatable object;

20 deforming the planar material at a line of demarcation between each of the member sides and the corresponding elongated legs defined by the predetermined pattern, such that the elongated legs are adapted to be disposed along the surface of the rotatable object about the rotational axis; and

25 disposing the central hub polygonal protrusion on the rotatable object substantially centered along a rotational axis defined by the intended rotational engagement of the rotatable object, at least one integral attachment surface continuous with at least one of the rigid surfaces and adapted to be attached to the rotatable object.

12 The engageable protrusion member of claim 11 wherein the engageable member  
30 is operable to be engaged and rotated by a receptacle having a complementary shape to the engageable protrusion.

13. The engageable protrusion member of claim 12 wherein the attachment to the rotatable object is adapted to withstand shear forces from rotation of the engaging receptacle.

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14. The engageable protrusion member of claim 11 wherein the continuous rigid surfaces define a polygon.

15. The engageable protrusion member of claim 14 wherein each of the continuous rigid surfaces is substantially opposed to another continuous rigid surface on a substantially opposed side of the polygon.

16. The engageable protrusion member of claim 11 wherein the integral attachment surface further comprises continuous elongated legs formed by a linear deformation of the deformable planar material along an axis substantially perpendicular to the convex edge of an adjacent rigid surface.

17. The engageable protrusion member of claim 11 wherein the integral attachment surface further comprises a continuous surface integral with the sides of the polygon and substantially perpendicular to each of the opposed rigid surfaces.

18. The engageable protrusion member of claim 11 wherein the continuous rigid surfaces comprise a continuous repeatable pattern in the deformable, resilient planar material, the continuous repeatable pattern avoiding waste portions therebetween.

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19. The engageable protrusion member of claim 11 further comprising a discontinuous seam between adjacent sides of the polygon.

20. A method of forming an engagement device having a polygonal protrusion adapted for engagement by a receptacle comprising:

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defining a planar pattern having a plurality of side portions and corresponding integral leg portions extending respectively from each of the side portions, the leg portions demarcated between adjacent leg portions and each of the side portions continuous with at least one other side portion and with the corresponding leg portion;

5 identifying a continuous, repeatable pattern according to the defined planer pattern on a rigid, deformable planar surface, such that the continuous repeatable pattern avoids intervening waste segment portions between the identified patterns on the rigid deformable planar surface;

10 cutting the rigid, deformable planer surface according to the continuous repeatable pattern, cutting including cutting between the demarcated leg portions and not severing adjacent side portions or the leg portions from the corresponding side portion, the cutting of the demarcated leg portions substantially defining a leg deformation line between the side portions and each of the respective corresponding leg portions;

15 deforming each of the leg portions from the adjacent side portion at the defined leg deformation line such that each of the leg portions is substantially perpendicular to the corresponding side portion;

20 deforming each of the adjacent side portions from each adjacent side portion at a substantially similar deformation angle such that each side portion and corresponding leg portion is disposed from the adjacent side portion according to the deformation angle and substantially opposed from at least one other of the side portions, the opposed side portions defining a polygon;

disposing the leg portions on a rotatable object about an axis defined by the intended rotation of the rotatable object, the opposed side portions collectively forming a polygonal protrusion extending axially from the rotatable object; and

25 securing, via an attachment, the leg portions to an attachment surface on the rotatable object defined by the axis of rotation and substantially perpendicular to the axis of rotation such that the polygonal protrusion is operable to rotate the rotatable object about the axis.